

WHAT IS CLAIMED IS:

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1. An apparatus for performing image processing on image data including a memory color, comprising:

a characteristic value calculation part  
10 calculating a characteristic value from the image data;

an area extraction part extracting a specific color area of a specific color and a background area thereof from the image data, using  
15 the characteristic value and color information of the memory color stored in a storage part;

a target value calculation part calculating a target value for correcting a preferable color of the specific color from the characteristic value, the  
20 extracted specific color and background areas, and color information of the preferable color stored in the storage part; and

an image data color correction part calculating a correction for correcting the  
25 preferable color based on the calculated target value

and the characteristic value, and correcting a color of the specific color area based on the calculated correction and the characteristic value.

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2. The apparatus as claimed in claim 1,  
further comprising an attribute information obtaining  
10 part obtaining attribute information added to the  
image data,

wherein said image data color correction  
part corrects the color of the specific color area  
based further on the obtained attribute information.  
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3. The apparatus as claimed in claim 2,  
20 wherein the attribute information obtaining part  
obtains information on a condition for capturing the  
image data as the attribute information, the  
condition being one of a scene capture type, an F  
number, a shutter speed, white balance, and presence  
25 or absence of a flash.

4. The apparatus as claimed in claim 3,  
wherein said image data color correction part  
corrects the color of the specific color area by  
multiplying the calculated correction by a correction  
5 factor set according to the condition for capturing  
the image data.

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5. The apparatus as claimed in claim 1,  
wherein said characteristic value calculation part  
splits the image data into a plurality of regions,  
and calculates, for each region, at least one of an  
15 average, a median, a mode, and a standard deviation  
in color information, and a percentage of the region  
in the image data.

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6. The apparatus as claimed in claim 1,  
wherein the color information of the preferable color  
of the memory color stored in the storage part  
25 comprises chromaticity coordinates in a color space

and a range of the chromaticity coordinates.

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7. The apparatus as claimed in claim 1,  
wherein said target value calculation part sets an  
intersection of a straight line and an ellipsoid as  
the target value of the preferable color, the  
10 straight line being parallel to a slope of a segment  
connecting chromaticity coordinates of the background  
area and an origin, and passing through chromaticity  
coordinates of the preferable color of the specific  
color, the ellipsoid being formed by a range of the  
15 preferable color of the specific color.

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8. The apparatus as claimed in claim 7,  
wherein said image data color correction part  
corrects chromaticity coordinates of the specific  
color area of the image data by a predetermined  
distance calculated based on the characteristic value  
25 of the image data along an axis formed by the target

value and the characteristic value of the specific color area.

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9. The apparatus as claimed in claim 8, wherein the predetermined distance is calculated based on a percentage of the specific color area in  
10 the image data.

15 10. A method of performing image processing on image data including a memory color, the method comprising the steps of:

(a) calculating a characteristic value from the image data;

20 (b) extracting a specific color area of a specific color and a background area thereof from the image data, using the characteristic value and color information of the memory color stored in a storage part;

25 (c) calculating a target value for

correcting a preferable color of the specific color from the characteristic value, the extracted specific color and background areas, and color information of the preferable color stored in the storage part; and

5           (d) calculating a correction for correcting the preferable color based on the calculated target value and the characteristic value, and correcting a color of the specific color area based on the calculated correction and the characteristic value.

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11. The method as claimed in claim 10,  
15 further comprising the step of (e) obtaining attribute information added to the image data,  
wherein said (d) corrects the color of the specific color area based further on the obtained attribute information.

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12. An apparatus for performing image  
25 processing on image data including a memory color,

comprising:

an area extraction part extracting a specific color area of a specific color and a background area thereof from the image data, using  
5 color information of the memory color stored in a storage part;

a characteristic value calculation part calculating a characteristic value of at least one of the specific color area and the background area;

10 a target value calculation part calculating a target value and a correction for correcting a preferable color of the specific color from a result of the calculation by said characteristic value calculation part and color information of the  
15 preferable color stored in the storage part; and

an image data correction part correcting a color of the specific color area based on the correction calculated by said target value calculation part.

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13. The apparatus as claimed in claim 12,  
25 further comprising:

an attribute information obtaining part  
obtaining image attribute information,

wherein said target value calculation part  
calculates the target value and the correction for  
5 correcting the preferable color of the specific color  
further from the obtained image attribute information.

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14. The apparatus as claimed in claim 13,  
wherein the image attribute information relates to a  
condition for capturing the image data.

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15. The apparatus as claimed in claim 14,  
wherein said target value calculation part increases  
20 the correction when the condition for capturing the  
image data is a portrait mode.

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16. The apparatus as claimed in claim 12,  
wherein the characteristic value is a statistic of a  
color distribution of pixels in the specific color  
area for the specific color area, and is a statistic  
5 of a color distribution of pixels in the background  
area for the background area.

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17. The apparatus as claimed in claim 16,  
wherein each of the statistics employs at least one  
of a variance, a standard deviation, a median, a mode,  
and an average in a frequency distribution of the  
15 image data.

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18. The apparatus as claimed in claim 12,  
wherein the target value causes the color information  
of the preferable color of the specific color to  
shift toward the background area in accordance with  
the characteristic value.

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19. The apparatus as claimed in claim 12,  
wherein the target value is shiftable to a position  
dividing a segment connecting the color information  
of the preferable color of the specific color and a  
5 representative color of the background area  
proportionally in accordance with the characteristic  
value.

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20. The apparatus as claimed in claim 19,  
wherein the position dividing the segment  
proportionally is calculated from the characteristic  
15 value, the characteristic value being a hue  
distribution of the specific color area.

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21. The apparatus as claimed in claim 19,  
wherein the position dividing the segment  
proportionally is calculated from the characteristic  
value, the characteristic value being a chroma  
25 distribution of the specific color area.

22. An apparatus for performing image processing on image data including a human image, comprising:

an area extraction part extracting an area  
5 of a skin color and a background area thereof from the image data, using color information of a memory color stored in a storage part;

a characteristic value calculation part calculating a characteristic value of at least one of  
10 the area of the skin color and the background area;

a target value calculation part calculating a target value and a correction for correcting a preferable color of the skin color from a result of the calculation by said characteristic value  
15 calculation part and color information of the preferable color stored in the storage part; and

an image data correction part correcting a color of the area of the skin color based on the correction calculated by said target value  
20 calculation part.

25 23. The apparatus as claimed in claim 22,

further comprising:

an attribute information obtaining part  
obtaining image attribute information,

wherein said target value calculation part  
5 calculates the target value and the correction for  
correcting the preferable color of the skin color  
further from the obtained image attribute information.

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24. A method of performing image processing  
on image data including a memory color, comprising  
the steps of:

15 (a) extracting a specific color area of a  
specific color and a background area thereof from the  
image data, using color information of the memory  
color stored in a storage part;

(b) calculating a characteristic value of at  
20 least one of the specific color area and the  
background area;

(c) calculating a target value and a  
correction for correcting a preferable color of the  
specific color from a result of the calculation by  
25 said step (b) and color information of the preferable

color stored in the storage part; and

(d) correcting a color of the specific color area based on the correction calculated by said step (c).

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25. The method as claimed in claim 24,  
10 further comprising the step of (e) obtaining image attribute information,

wherein said step (c) calculates the target value and the correction for correcting the preferable color of the specific color further from  
15 the obtained image attribute information.

20 26. A method of performing image processing on image data including a human image, comprising the steps of:

(a) extracting an area of a skin color and a background area thereof from the image data, using  
25 color information of a memory color stored in a

storage part;

(b) calculating a characteristic value of at least one of the area of the skin color and the background area;

5 (c) calculating a target value and a correction for correcting a preferable color of the skin color from a result of the calculation by said step (b) and color information of the preferable color stored in the storage part; and

10 (d) correcting a color of the area of the skin color based on the correction calculated by said step (c).

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27. The method as claimed in claim 26, further comprising the step of (e) obtaining image attribute information,

20 wherein said step (c) calculates the target value and the correction for correcting the preferable color of the skin color further from the obtained image attribute information.

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28. A program for causing a computer to  
execute a method as set forth in claim 10.

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29. A program for causing a computer to  
execute a method as set forth in claim 24.

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30. A program for causing a computer to  
execute a method as set forth in claim 26.

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31. A computer-readable recording medium on  
20 which a program for causing a computer to execute a  
method as set forth in claim 10 is recorded.

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32. A computer-readable recording medium on which a program for causing a computer to execute a method as set forth in claim 24 is recorded.

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33. A computer-readable recording medium on which a program for causing a computer to execute a method as set forth in claim 26 is recorded.

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